US Army Medical Research and Materiel

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Compositions Having Neuroprotective and Analgesic Activity

This invention discloses the pharmaceutical compositions and methods of achieving a therapeutic response for the treatment of neuronal and toxin-related damage as well as analgesic protective benefits. This is achieved by administration of various isomers of 1-allyl-2,5-dimethyl-4-benzylhydryl compounds as analgesics and neuronal protective agents.

N-diphenylmethyl-N'-substituted piperazine compounds are antihistamines. One compound of the class has been used for treatment of alcoholism, anxiety and neurotic conditions when administered in certain daily doses. Previous research suggested that diarylmethylpiperazines and piperidines could have analgesic activity and are useful for studying the opioid receptor in drug-seeking behavior. However, these studies failed to demonstrate means for treating neuronal injury and achieving analgesia.

The invention may potentially be useful in treatment of conditions that would normally result in neuronal damage, including cerebral ischemia/hypoxia or increase in intracranial pressure from neoplasms, stroke, meningitis, [illegible]ma. Additionally, may potentially be used to treat neuronal damage caused by diseases such as multiple sclerosis, Alzheimer's disease, myotrophic lateral sclerosis, Huntington's chorea, Parkinson's disease, and senile dementia.

Features and advantages:

- **(+)-8 compound (SNC80) failed to elicit convulsive activity in rats, unlike opioids**
- **Shows neuroprotective ability against the excitotoxin glutamate in cell culture**
- **SNC80 treatment results in beneficial shift in intracellular Ca^{++} concentration**
- **Could potentially be given orally**
- **standard parenteral methods**

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